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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,028	06/30/2006	Chunquan Chen	2793/112	7849

23122 7590 10/01/2010
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EXAMINER	
PRYOR, ALTON NATHANIEL	
ART UNIT	PAPER NUMBER
1616	

MAIL DATE	DELIVERY MODE
10/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/554,028	CHEN ET AL.	
	Examiner	Art Unit	
	ALTON N. PRYOR	1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,8,17,18-25,28--30,33-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,8,17,18-25,28--30,33-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/26/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments filed 7/2610 have been fully considered but they are not persuasive. See discussion below. Previous rejections not addressed below are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7,8,17,18-25,28--30,33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (WO 00/04778; 2/3/00). Smith et al. teach a method for promoting the germination of seed and/or seedling emergence and/or the growth plants (e.g. legumes and non-legumes) comprising subjecting the plants to an effective amount of an agricultural composition comprising 10 superscript -5 to 10 superscript -14 M Lipo chitooligosaccharide (LCO) and carrier. See abstract, page 4 lines 21-28, page 7 lines 11-29, page 11 line 11- page 12 line 25, page 16 lines 1-8 and Examples 4-6. The application of a plant to LCOs would include contacting the whole plant (foliage and stem) with the LCOs. Smith at page 4 line 20 – page 5 and page 7 lines 3-18 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceace and Solonaceae (tomatoes) are treated with LCOs. Since both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants. Smith et al. do teach that LCO is present in an amount to increase flower or fruit number in four weeks after application. Smith et al. also do not teach the administration

of the ng amount of LCO to the plant or the treatment of tomato plants with LCO. In the absence of unexpected results for the claim concentration range, it is well within the skill of an artisan in the field to determine the optimum concentration. One would have been motivated to do this in order to gain proper and healthy maturation of the plant. One would have been expected to treat tomato plants with LCO since the tomato plants are species in the Solonaceae plant genus.

Response to Applicants' arguments

Applicants ague that Smith et al. do not teach a composition for increasing early flowering wherein the LCO concentration is effective in increasing flowering and fruiting of a plant over a four week period. In composition claim 7 this is a statement to intended use, and thus, carries no patentable sufficient. Note, Smith method promotes the growth of plants by applying LPO; therefore the LCO used in Smith et al. would increase flowering and fruiting. Applicants argue that WO '778 at page 13 teaches seed treatment of nonlumge plants with LCO rather than foliage application of LCO as instantly claimed. The Applicants make these arguments to support that the LCO enclosed in WO '778 is not applied to seedling or foliage. However, the Examiner argues that WO '778 at page 5 in last paragraph and claim 22 disclose treating plants (seedlings) with LCO. This teaching discloses that LCO is applied to the whole plant or seedling which would include the foliage thereof.

The Applicants argue that Smith does not disclose or suggest an effect of LCOs on the flowering, fruiting or yield in nonleguminous plants. The Applicant argues that WO '778 discloses the effect of LCO seed treatment on germination of seeds and seedling emergence and growth in leguminous plants. WO '778 does not teach foliar treatment of any nonleguminous plant. The Examiner argues that Smith at page 4 line 20 – page 5 and page 7 lines 3-18 teaches

that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceace and Solonaceae are treated with LCOs. WO '778 does not explicitly state that LCO is applied to plant foliage. However, WO '778 does state the plants and crop are treated with LCO. From such a statement, it can be deduced that LCO is applied to the total plant including the plant's foliage. The Examiner reiterates that both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants. Thus, the results in paragraphs 52 and 53 of the specification are made obvious by Smith et al.

Claims 7,8,17,18-25,28--30,33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (WO 01/26465; 4/19/01). Smith et al. teach a method for increasing photosynthesis and/or yield plants (e.g. legumes and non-legumes) comprising exposing the plant leaves to an effective amount of an agricultural composition comprising 10 superscript -5 to 10 superscript -14 M Lipo chito-oligosaccharide (LCO) plus carrier. See abstract, page 5 line 20 – page 7 line 24, page 10 lines 4-10, page 15 lines 9-23, page 18 line 3 – page 19 line 7, Examples 3,5,6 and table 3,6. The exposure of a plant to LCOs would include contacting the whole plant (foliage and stem) with the LCOs. Smith at page 4 line 20 – page 5 and page 7, page 6 lines 3-13, page 7lines 10-24, and page 8 line 2 – page 9 line 13 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceace and Solonaceae are treated with LCOs. The Examiner reiterates that both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants. Thus, the results in paragraphs 52 and 53 of the specification are made obvious by Smith et al. Smith et

al. do teach that LCO is present in an amount to increase flower or fruit number in four weeks after application. Smith et al. also do not teach the administration of the ng amount of LCO to the plant or the treatment of tomato plants with LCO. In the absence of unexpected results for the claim concentration range, it is well within the skill of an artisan in the field to determine the optimum concentration of LCO to apply to the plant. Note, at page 6 line 3 - page 8 line 9, Smith et al. suggest that LCO is applied to the plant. One would have been motivated to do this in order to gain proper and healthy maturation of the plant.

Response to Applicants' Argument

Applicants ague that Smith et al. do not teach a composition for increasing early flowering wherein the LCO concentration is effective in increasing flowering and fruiting of a plant over a four week period. In composition claim 7 this is a statement to intended use, and thus, carries no patentable sufficient. Note, Smith method increase photosynthesis and/or yields plants by exposing plants to LPO; therefore the LCO used in Smith et al. would increase flowering and fruiting. Applicant argue that '465 teach spray containing LCO was applied to plants when plants were large enough to allow easy leaf measurement (p. 21 lines 22-24). The Examiner concurs that '465 discloses that LCO is applied to plant leaf. The Applicants argue that Smith does not disclose or suggest an effect of LCOs on the flowering, fruiting or yield in nonleguminous plants. The Examiner argues that Smith at page 4 line 20 – page 5 and page 7, page 6 lines 3-13, page 7lines 10-24, and page 8 line 2 – page 9 line 13 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceace and Solonaceae are treated with LCOs. Since both instant invention and Smith teach the same active

step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants.

Claims 7,8,17,18-25,28--30,33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prithiviraj. (A host specific bacteria-to-plant signal molecule (Nod factor) enhances germination and early growth of diverse crops, Planta, 2003, vol. 216, pp. 437-445). Prithiviraj teaches a method enhancing germination and early growth of plants (e.g. legumes) comprising applying to the plants to an effective amount of an agricultural composition comprising Lipo chitooligosaccharide (LCO). See abstract and p. 440. The application of a plant to LCOs would include contacting the whole plant (foliage and stem) with the LCOs. Prithiviraj does not state that plants are harvested or that harvesting resulted in a yield increase. However, it is inherent that plants such as legumes would be harvested. It is also inherent that instant method of harvesting results in an increased yield since both Prithiviraj and instant claims disclose the same active step of applying LCO to plants. Prithiviraj do not teach that LCO is present in an amount to increase flower or fruit number in four weeks after application. Prithiviraj also does not teach the administration of the ng amount of LCO to the plant or the treatment of tomato plants with LCO. In the absence of unexpected results for the claim concentration range, it is well within the skill of an artisan in the field to determine the optimum concentration. One would have been motivated to do this in order to gain proper and healthy maturation of the plant. One would have been expected to treat tomato plants with LCO since the tomato plants are species in the Solonaceae plant genus.

Telephonic Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTON N. PRYOR whose telephone number is (571)272-0621. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alton N. Pryor/
Primary Examiner, Art Unit 1616